I claim:

1. A receiver for receiving and efficiently separating a

composite 3-G wireless communications signal into its constituent base-band components,

comprising

       combining multiple processing tasks of a conventional receiver into a single entity,

wherein the entity performs the processing required for multiple channels in a single device.

2. A receiver as claimed in claim 1 wherein the tasks of spectral translation, bandwidth

reduction and of interpolation to change sample rate by a rational ratio are embedded in a

resampling polyphase filter bank, and the single polyphase filter operates in a resampling mode

so that the input and output sample rates are different.

3. A receiver as claimed in claim 1 comprising changing the sample rate within the filtering

process to induce spectral aliasing of multiple spectral centers, and intentional aliasing is

invoked as a replacement for the input down conversion of each channel in a conventional

receiver structure.

4. A receiver structure that embeds both sample rate changes of the input data and sample rate

changes of the output data, wherein interaction of the two sample rate changes is absorbed in the

polyphase filter as a scheduling of input data samples being delivered to –elected filter registers,

the polyphase partitioned filter weights are simultaneously reassigned to different filter registers

for computation of register outputs, and selected registers may not receive input samples when

directed to deliver output samples.

5. A receiver as claimed in claim 4 comprising structure that collects samples computed from a polyphase partitioned filter and performs phase rotations and summations to separate the multiple aliases, caused by resampling, and residing in each polyphase path to extract the separate signals by destructive cancellation of the alias terms.

6. A method for constructing overlapped spectral bands in a polyphase filter bank, comprising the step of permitting overlapped bands undistorted access to signals with spectral content located at band edges of a channelizer that does not support overlapped spectra.

7. The method as claimed in claim 6 comprising the step of heterodyning the outputs of a polyphase filter to re-center the spectral terms that alias to base-band due to the down sampling without alias to a specified desired frequency.

8. The method as claimed in claim 6 comprising the step of cascading polyphase filters to effect an initial channelization consisting of translation, bandwidth reduction, and sample rate change on, and applying a second layer of translation, bandwidth reduction, and sample rate change.